

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau(43) International Publication Date
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number
WO 2004/030264 A1(51) International Patent Classification⁷: H04L 1/06, 1/00(74) Agent: SLENDERS, Petrus, J., W.; Philips Intellectual
Property & Standards, Prof. Holstlaan 6, NL-5656 AA
Eindhoven (NL).

(21) International Application Number:

PCT/IB2003/003567

(22) International Filing Date: 8 August 2003 (08.08.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

02079073.9

30 September 2002 (30.09.2002)

EP

(71) Applicant (for all designated States except US): KONIN-
KLIJKE PHILIPS ELECTRONICS N.V. [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).(81) Designated States (national): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

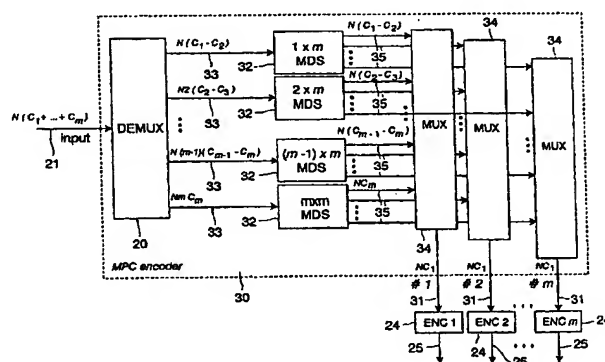
(75) Inventors/Applicants (for US only): GOROKHOV,
Alexei [FR/NL]; c/o Prof. Holstlaan 6, NL-5656
AA Eindhoven (NL). WILLEMS, Franciscus, M., J.
[NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven
(NL).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: TRANSMISSION SYSTEM



(57) Abstract: Described is a transmission system (10) for transmitting an information signal (21) via a plurality of subchannels from a transmitter (12) to a receiver (16). The transmitter (12) first demultiplexes the information signal (21) into a plurality of information subsignals (33). Next, the information subsignals (33) are encoded according to a code with certain properties, e.g. a maximum distance separable (MDS) code, and multiplexed. Finally, the resulting subsignals (31) are channel encoded and transmitted to the receiver (16). The receiver (16) comprises a channel decoder (46,52,76,128) for successively channel decoding the received subsignals by incorporating decoding information (83,87,91) of already channel decoded information subsignals. Next, the resulting subsignals are demultiplexed, decoded according to said code and multiplexed into an output signal. Said code enables input symbols to be encoded into output symbols such that k input symbols of the k -th information subsignal are encoded with a kxm -code into m output symbols, $1 \leq k \leq m$, said code having the following properties: all k input symbols and all $m-k$ other output symbols are determinable from any k output symbols, and no $m-1$ other output symbols are determinable from any 1 output symbols 1

INTERNATIONAL SEARCH REPORT

PO 03/03567

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04L1/06 H04L1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04L H04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ABE T ET AL: "Space-time turbo equalization and symbol detection in frequency selective MIMO channels" VTC FALL 2001. IEEE 54TH. VEHICULAR TECHNOLOGY CONFERENCE. PROCEEDINGS. ATLANTIC CITY, NJ, OCT. 7 - 11, 2001, IEEE VEHICULAR TECHNOLOGY CONFERENCE, NEW YORK, NY: IEEE, US, vol. 1 OF 4. CONF. 54, 7 October 2001 (2001-10-07), pages 1230-1234, XP010562628 ISBN: 0-7803-7005-8 the whole document	1-17
A	EP 0 951 091 A (LUCENT TECHNOLOGIES INC) 20 October 1999 (1999-10-20) cited in the application the whole document	1-17
-/--		

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

22 December 2003

Date of mailing of the international search report

02/01/2004

Name and mailing address of the ISA
European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Toumpoulidis, T

INTERNATIONAL SEARCH REPORT

IB 03/03567

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>AYANOGLU E ET AL: "ANALOG DIVERSITY CODING TO PROVIDE TRANSPARENT SELF-HEALING COMMUNICATION NETWORKS" IEEE TRANSACTIONS ON COMMUNICATIONS, IEEE INC. NEW YORK, US, vol. 42, no. 1, 1994, pages 110-118, XP000442861 ISSN: 0090-6778 the whole document</p>	1-17

INTERNATIONAL SEARCH REPORT

P 03/03567

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0951091	A	20-10-1999	US 6317466 B1 13-11-2001
		EP 0951091 A2 20-10-1999	
		JP 2000101667 A 07-04-2000	
		US 2001050964 A1 13-12-2001	